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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/009,539
Filing Date: October 29, 2001
Appellant(s): WEINER, HELMUT

Melvin A. Robinson
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 12 December 2007 appealing from the Office action mailed 10 July 2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,949,964	CLOUTHIER ET AL	9-1999
5,822,451	SPAULDING ET AL	10-1998
5,649,073	KNOX ET AL	7-1997
4,758,897	HIRATSUKA ET AL	7-1988
4,032,978	WONG	6-1977
4,652,935	ENDOH ET AL	3-1987

5,526,469	BRINDLE ET AL	6-1996
5,940,584	ZUFLE	8-1999
EP 0 774 858 A2	VENKATESWAR	5-1997

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 39-46, 51, 53-56, 58-61, 70, 72, 75-77, 79-83 and 85-88 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clouthier (US Patent 5,949,964) in view of Spaulding (US Patent 5,822,451) and Knox (US Patent 5,649,073).

Regarding claim 39: Clouthier discloses a method comprising: generating a data stream of image raster data page-by-page (column 4, lines 9-14 of Clouthier) from language elements of a graphics language (column 3, lines 29-32 of Clouthier), said data stream containing gray image areas in a form of dither cells (column 4, lines 2-8 of Clouthier); dividing said image raster data of each one of said pages into tiles of a two-dimensional grid (figure 1(14) and column 3, lines 28-32 of Clouthier), each of said tiles including a plurality of said image raster data (column 5, lines 6-12 of Clouthier); identifying ones of said tiles that contain only dither cells (column 5, lines 40-47 of Clouthier), and marking said tiles that contain only dither cells to produce marked tiles (column 5, lines 6-12 of Clouthier); identifying position data (column 6, line 63 to column 7, line 1 of Clouthier) and gray scale values (column 6, lines 12-17 of Clouthier) and corresponding dither cells for said marked tiles as characterizing data for said marked tiles (column 5, lines 6-12 and column 6, lines 63-65 of Clouthier); and transmitting said image raster data of pages including transmitting said characteristic data of the marked tiles for printing of the image raster data (column 4, line 57 to column 5, line 14 of Clouthier). The tiles correspond to the sections of image data that are classified in one of four possible ways (column 4, lines 2-8 of Clouthier).

Clouthier does not disclose expressly that the gray scale values of said dither cells correspond to model dither cells; that said identified tiles contain only dither cells; and that said transmitting is performed without transmitting image raster data of said marked tiles having gray scale values of a predetermined model dither cell.

Spaulding discloses that the gray scale values of dither cells correspond to model dither cells (figure 11(116A-C) and column 14, lines 32–39 of Spaulding); and identifying a model dither cell and a gray scale value thereof for each tile of dither cells (column 14, lines 36-45 of Spaulding).

Clouthier and Spaulding are combinable because they are from the same field of endeavor, namely selective processing, control and output of digital color image dither data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the model dither cells to set the dither cells of each corresponding gray scale value for each tile of dithered image data, as taught by Spaulding, wherein said dither cells are the dither cells of the tiles specifically determined and marked by the system taught by Clouthier. The motivation for doing so would have been reduce image artifacts by using already optimized model dither cells stored in LUTs for dithering the image data (column 3, lines 28-35 of Spaulding). Further, it would have been readily recognized by one of ordinary skill in the art at the time of the invention that using already optimized dither cells stored in LUTs decreases the overall processing time required. Therefore, it would have been obvious to combine Spaulding with Clouthier.

Clouthier in view of Spaulding does not disclose expressly that said transmitting is performed without transmitting image raster data of said marked tiles having gray scale values of a predetermined model dither cell.

Knox discloses transmitting characteristic data without transmitting image raster data (figure 6A ("MODEL PARAMETERS"); figure 6B("EXPECTED TRC"); column 5, lines 20-30; and column 8, lines 3-11 of Knox). The characteristic data of the scanned image is determined and used to calibrate the

printer. Only the characteristic data, such as the model parameters and tone reproduction curve (TRC), are transmitted in calibration mode. The image raster data itself is not transmitted.

Clouthier in view of Spaulding is combinable with Knox because they are from the same field of endeavor, namely the correction of digital image data. Furthermore, Knox is concerned with the same problem solving area as the present application, namely the correction of image data in an efficient manner, without require the transmission of the actual image data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to correct image data by transmitting only the characteristic data needed to perform the correction/calibration, as taught by Knox, instead of the image raster data of said marked tiles taught by Clouthier. The motivation for doing so would have been to provide for an automatic correction/calibration using a single set of characterization data, rather than using the sets of image data (column 2, lines 39-41 of Knox), thus improving speed and efficiency. Therefore it would have been obvious to combine Knox with Spaulding in view of Clouthier to obtain the invention as specified in claim 39.

Regarding claim 40: Clouthier discloses that said dither cells include picture elements that are arranged one of rectangularly and quadratically (figure 2b(52,54,56) and column 8, lines 60-62 of Clouthier); and that each dither cell with a higher gray scale value at least contains inked picture elements at same positions as a dither cell with a next-lower gray scale value (column 6, lines 33-37 of Clouthier).

Regarding claim 41: Clouthier discloses checking each of said tiles to see whether said tiles contain dither cells of a type of said model dither cell with a lowest gray scale value (column 6, lines 39-46 of Clouthier). Each dither cell that is within a tile is checked to see if the dither cell is of the lowest gray scale value, the lowest gray scale value being checked first (column 6, lines 39-46 of Clouthier).

Regarding claim 42: Clouthier discloses checking tiles row by tile row; and further comprising the step of investigating a first row of dither cells of each tile before investigating subsequent rows of dither cells of the tile (column 6, lines 36-43 of Clouthier); and, given a lack of coincidence, the

appertaining tile is investigated no further (column 6, lines 39-46 of Clouthier). The tiles are all arranged in a logically tiled manner across the entire image space (column 6, lines 36-43 of Clouthier), which would thus include the first tile of the first row (first row of dither cells of each tile). The tiles would inherently be checked row-by-row since the fast scanning direction would be considered the row of the image data.

Regarding claim 43: Clouthier in view of Spaulding discloses determining said model dither cell with a highest gray scale value that is contained in all dither cells of a tile (figure 2a(50) and column 7, lines 47-50 of Clouthier) for the tile that contains dither cells of a type of said model dither cell with said lowest gray scale value (column 7, lines 39-41 of Clouthier), said model dither cell with the highest gray scale value that is contained in all dither cells of the tile being said predetermined model dither cell (column 7, lines 45-50 of Clouthier); and assigning a gray scale value of said model dither cell to said tile (column 7, lines 45-50 of Clouthier). By increasing the bucket level for a tile of dither cells in the case that a dither cell has a higher gray scale value (column 7, lines 45-50 of Clouthier), the gray scale value of the highest gray scale value dither cell is assigned to said tile. Thus, when there is a model dither cell with said lowest gray scale value and a model dither cell with said highest gray scale value in a single tile, the tile will be assigned the highest gray scale value. As discussed above in the arguments regarding claim 39, Spaulding discloses that the gray scale values of dither cells correspond to model dither cells (figure 11(116A-C) and column 14, lines 32–39 of Spaulding). Thus, the combination of Clouthier in view of Spaulding teaches the specific limitations recited in claim 43.

Regarding claim 44: Clouthier discloses that said tiles have a uniform row length (n times the number of bits per pixel cell) (column 6, lines 33-35 of Clouthier).

Regarding claim 45: Clouthier discloses that said uniform row length corresponds to a bit length of a register of a hardware module (figure 2b(52,54,56: depending on supercell size) of Clouthier) with which the present method is implemented (column 7, lines 60-65 of Clouthier). The bit length

corresponding to said uniform row length is determined by the particular register used, which depends upon the final bucket value (column 7, lines 60-65 of Clouthier).

Regarding claim 46: Clouthier discloses that said uniform length amounts to one of 8, 16, 32, 64 and 128 bits or an additive combination thereof (figure 2a(48) and column 6, lines 16-21 of Clouthier).

Regarding claim 51: Clouthier discloses combining neighboring ones of said tiles having a prescribed gray scale value corresponding to one of said model dither cells to form a polygon (figure 2a (48) and column 6, line 63 to column 7, line 3 of Clouthier); identifying said characteristic data of said polygon (column 6, lines 63-67 of Clouthier – corresponding bucket); and transmitting said characteristic data of said polygon for further processing of said image raster data (figure 2b and column 8, lines 25-35 of Clouthier).

Clouthier in view of Spaulding does not disclose expressly that said transmitting is performed instead of transmitting raster data of said polygon.

Knox discloses transmitting characteristic data without transmitting raster data (figure 6A ("MODEL PARAMETERS"); figure 6B("EXPECTED TRC"); column 5, lines 20-30; and column 8, lines 3-11 of Knox). The characteristic data of the scanned image is determined and used to calibrate the printer. Only the characteristic data, such as the model parameters and tone reproduction curve (TRC), are transmitted in calibration mode. The image raster data itself is not transmitted.

Clouthier in view of Spaulding is combinable with Knox because they are from the same field of endeavor, namely the correction of digital image data. Furthermore, Knox is concerned with the same problem solving area as the present application, namely the correction of image data, such as the polygon taught by Clouthier, in an efficient manner, without require the transmission of the actual image data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to correct image data by transmitting only the characteristic data needed to perform the required processing, as taught by Knox. The motivation for doing so would have been to provide for an automatic processing

using a single set of characterization data, rather than using the sets of image data (column 2, lines 39-41 of Knox), thus improving speed and efficiency. Therefore it would have been obvious to combine Knox with Spaulding in view of Clouthier to obtain the invention as specified in claim 51.

Regarding claim 53: Clouthier discloses that said polygon is one of a square and a rectangle (figure 2b(52,54,56) and column 8, lines 12-17 of Clouthier).

Regarding claim 54: Clouthier discloses that said combining step combines said tiles to form a rectangle (figure 2b(52,54,56) of Clouthier) having a common minimal gray scale value (column 6, lines 63-67 and column 7, lines 39-44 of Clouthier); and wherein said transmitting step transmits said characteristic data of said rectangle (figure 2b and column 8, lines 25-35 of Clouthier).

Regarding claim 55: Clouthier discloses that said rectangle contains a sub-rectangle (column 8, lines 12-17 of Clouthier) whose tiles have a minimum gray scale value that is higher than a gray scale value of the tiles of said rectangle (figure 2a(48) and column 7, lines 45-50 of Clouthier). The individual elements of the rectangle (column 8, lines 12-17 of Clouthier) increase the bucket value of the overall rectangle, thus resulting in the tiles of the sub-rectangle having a minimum gray scale value higher than a gray scale value of said rectangle (figure 2a(48) and column 7, lines 45-50 of Clouthier).

Regarding claim 56: Clouthier discloses producing a list of said rectangles (column 8, lines 25-30 of Clouthier); and transmitting said characteristic data of said list (column 8, lines 34-35 of Clouthier).

Regarding claim 58: Clouthier discloses organizing said list such that rectangles with a descending number of tiles assume a descending rank in the list (column 8, lines 12-16 of Clouthier); and transmitting only those rectangles from said list whose number of tiles exceeds a predetermined value for further processing (column 8, lines 30-35 of Clouthier). The list of selectable supercells is organized such that the smallest supercell has the smallest rank and the largest supercell has the largest rank (column 8, lines 12-16 of Clouthier). If the data type requires the selection of the largest supercell, then the largest supercell is output (column 8, lines 30-35 of Clouthier).

Regarding claim 59: Clouthier discloses limiting a number of rectangles of said list to a predetermined value (column 8, lines 16-24 of Clouthier). The number of rectangles is limited by setting the rectangle size based on the capabilities of the printer to be used (column 8, lines 16-24 of Clouthier).

Regarding claim 60: Clouthier discloses expanding boundaries of said rectangles by incorporating into said rectangles any dither cells of one of a row and of a sequence that adjoin a corresponding rectangle (column 6, lines 50-57 of Clouthier) and that have a same minimum gray scale value as said dither cells of said corresponding rectangle so as to form expanded rectangles (column 6, lines 63-67 of Clouthier).

Regarding claim 61: Clouthier discloses determining a position of an upper left corner (column 7, lines 12-15 of Clouthier), a height, a width (column 6, lines 33-35 of Clouthier), and a gray scale value for each of said rectangles (column 6, lines 63-67 of Clouthier) with reference to said pages as said characteristic data (column 6, lines 33-39 of Clouthier); and transmitting said characteristic data (figure 2b and column 8, lines 25-35 of Clouthier). A position for each pixel is determined (column 7, lines 12-15 of Clouthier), thus including the pixel at the upper left corner of the rectangle.

Regarding claim 70: Clouthier discloses generating a data stream of image raster data page-by-page (column 4, lines 9-14 of Clouthier) from language elements of the graphics language (column 3, lines 29-32 of Clouthier) using a RIP module (figure 1(16) of Clouthier).

Regarding claim 72: Clouthier discloses transmitting said raster data as print raster data to a printer (figure 1(28) and column 4, lines 52-56 of Clouthier).

Regarding claims 75, 85 and 87: Clouthier discloses a system (figure 1(12) and column 2, line 66 to column 3, line 2 of Clouthier) comprising a RIP module (figure 1(16) of Clouthier) that generates a data stream of image raster data page-by-page (column 4, lines 9-14 of Clouthier) from language elements of a graphics language (column 3, lines 29-32 of Clouthier), said data stream containing gray image areas in a form of dither cells (column 4, lines 2-8 of Clouthier); a two-dimensional grid network (figure 1(14)

and column 3, lines 28-32 of Clouthier) by which said image raster data of each page is divided into tiles, each tile including a plurality of image raster data (column 5, lines 6-12 of Clouthier), a gray scale value is identified for each tile that contains only dither cells (column 5, lines 40-47 of Clouthier), and said tile is marked (column 5, lines 6-12 of Clouthier); and an apparatus (figure 1(22) of Clouthier) for transmitting characteristic data of the marked tiles for further processing of the image raster data (column 4, lines 57-62 and column 5, lines 1-4 of Clouthier), said characteristic data including information about a position of the respective tile (column 6, line 63 to column 7, line 1 of Clouthier) and a respective gray scale value (column 6, lines 12-17 of Clouthier). The tiles correspond to the sections of image data that are classified in one of four possible ways (column 4, lines 2-8 of Clouthier).

Clouthier does not disclose expressly that the gray scale values of said dither cells correspond to model dither cells; an appertaining model dither cell and said gray scale value thereof are identified for each tile that contains only dither cells; and that said transmitting is performed without transmitting raster image data of marked tiles.

Spaulding discloses determining the gray scale values of dither cells using model dither cells (figure 11(116A-C) and column 14, lines 32–39 of Spaulding); and identifying an appertaining model dither cell and a gray scale value thereof for each tile of dither cells (column 14, lines 36-45 of Spaulding).

Clouthier and Spaulding are combinable because they are from the same field of endeavor, namely selective processing, control and output of digital color image dither data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the model dither cells to set the dither cells of each corresponding gray scale value for each tile of dithered image data, as taught by Spaulding, wherein said dither cells are the dither cells of the tiles specifically determined and marked by the system taught by Clouthier. The motivation for doing so would have been reduce image artifacts by using already optimized model dither cells stored in LUTs for dithering the image data (column 3,

lines 28-35 of Spaulding). Further, it would have been readily recognized by one of ordinary skill in the art at the time of the invention that using already optimized dither cells stored in LUTs decreases the overall processing time required. Therefore, it would have been obvious to combine Spaulding with Clouthier.

Clouthier in view of Spaulding does not disclose expressly that said transmitting is performed without transmitting raster image data of marked tiles.

Knox discloses transmitting characteristic data without transmitting image raster data (figure 6A ("MODEL PARAMETERS"); figure 6B("EXPECTED TRC"); column 5, lines 20-30; and column 8, lines 3-11 of Knox). The characteristic data of the scanned image is determined and used to calibrate the printer. Only the characteristic data, such as the model parameters and tone reproduction curve (TRC), are transmitted in calibration mode. The image raster data itself is not transmitted.

Clouthier in view of Spaulding is combinable with Knox because they are from the same field of endeavor, namely the correction of digital image data. Furthermore, Knox is concerned with the same problem solving area as the present application, namely the correction of image data in an efficient manner, without require the transmission of the actual image data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to correct image data by transmitting only the characteristic data needed to perform the correction/calibration, as taught by Knox, instead of the image raster data of said marked tiles taught by Clouthier. The motivation for doing so would have been to provide for an automatic correction/calibration using a single set of characterization data, rather than using the sets of image data (column 2, lines 39-41 of Knox), thus improving speed and efficiency. Therefore it would have been obvious to combine Knox with Spaulding in view of Clouthier to obtain the invention as specified in claims 75, 85 and 87.

Further regarding claim 85: The system of claim 75 embodies the computer program product of claim 85 and performs the associated steps performed by said computer program product.

Further regarding claim 87: The system of claim 75 embodies the computer program element of claim 87 and performs the associated steps performed by said computer program element.

Regarding claim 77: Clouthier discloses a polygon formed by combining neighboring tiles with predetermined gray scale value corresponding to a model dither cell (figure 2a(48) and column 6, line 63 to column 7, line 3 of Clouthier); and wherein said apparatus for transmitting transmits said characteristic data of said polygon for further processing of said image raster data (figure 2b and column 8, lines 25-35 of Clouthier).

Clouthier in view of Spaulding does not disclose expressly that said transmitting is performed instead of transmitting characteristic data of individual marked tiles of the polygon.

Knox discloses transmitting characteristic data of the overall image without transmitting data with respect to individual portions of the image (figure 6A ("MODEL PARAMETERS"); figure 6B ("EXPECTED TRC"); column 5, lines 20-30; and column 8, lines 3-11 of Knox). The characteristic data of the scanned image is determined and used to calibrate the printer. Only the characteristic data relating to the entire image, such as the model parameters and tone reproduction curve (TRC), are transmitted in calibration mode. Data relating to individual units or portions of the image are not transmitted.

Clouthier in view of Spaulding is combinable with Knox because they are from the same field of endeavor, namely the correction of digital image data. Furthermore, Knox is concerned with the same problem solving area as the present application, namely the correction of image data, such as the polygon taught by Clouthier, in an efficient manner, without require the transmission of the actual image data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to correct image data by transmitting only the characteristic data needed to perform the required processing, as taught by Knox. The motivation for doing so would have been to provide for an automatic processing using a single set of characterization data, rather than using data corresponding to portions of the image (column 2, lines 39-41 of Knox), thus improving speed and efficiency. Therefore it would have been

obvious to combine Knox with Spaulding in view of Clouthier to obtain the invention as specified in claim 77.

Regarding claim 79: Clouthier discloses that said polygon is one of a square and a rectangle (figure 2b(52,54,56) and column 8, lines 12-17 of Clouthier).

Regarding claims 80 and 86: Clouthier discloses a computer program product comprising a computer-readable medium on which is stored a computer program having commands in encoded form, said computer program causing a computer to implement the following steps (column 3, lines 12-15 of Clouthier): generating a data stream of image raster data page-by-page (column 4, lines 9-14 of Clouthier) from language elements of a graphics language (column 3, lines 29-32 of Clouthier), said data stream containing gray picture elements in a form of dither cells (column 4, lines 2-8 of Clouthier); determining at least one area that contains only dither cells (column 4, lines 3-5 of Clouthier); identifying a gray scale value of said at least one area (column 5, lines 40-47 of Clouthier), and marking said at least one area (column 5, lines 6-12 of Clouthier); and transmitting characteristic data of said marked tiles for printing of the image raster data (column 4, line 57 to column 5, line 14 of Clouthier), said characteristic data containing information about a position of the respective tile (column 6, line 63 to column 7, line 1 of Clouthier) and the respective gray scale value (column 6, lines 12-17 of Clouthier). The tiles correspond to the sections of image data that are classified in one of four possible ways (column 4, lines 2-8 of Clouthier).

Clouthier does not disclose expressly that the gray scale values of said dither cells correspond to model dither cells; identifying an appertaining model dither cell and said gray scale value of said at least one area; and that said transmitting is performed without transmitting the raster image data of said at least one area.

Spaulding discloses defining the gray scale values of dither cells using model dither cells (figure 11(116A-C) and column 14, lines 32–39 of Spaulding); and identifying an appertaining model dither cell and a gray scale value of at least one area of dither cells (column 14, lines 36-45 of Spaulding).

Clouthier and Spaulding are combinable because they are from the same field of endeavor, namely selective processing, control and output of digital color image dither data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the model dither cells to set the dither cells of each corresponding gray scale value for each tile of dithered image data, as taught by Spaulding, wherein said dither cells are the dither cells of the tiles specifically defined and marked by the system taught by Clouthier. The motivation for doing so would have been reduce image artifacts by using already optimized model dither cells stored in LUTs for dithering the image data (column 3, lines 28-35 of Spaulding). Further, it would have been readily recognized by one of ordinary skill in the art at the time of the invention that using already optimized dither cells stored in LUTs decreases the overall processing time required. Therefore, it would have been obvious to combine Spaulding with Clouthier.

Clouthier in view of Spaulding does not discloses expressly that said transmitting is performed without transmitting the raster image data of said at least one area.

Knox discloses transmitting characteristic data without transmitting raster image data (figure 6A ("MODEL PARAMETERS"); figure 6B("EXPECTED TRC"); column 5, lines 20-30; and column 8, lines 3-11 of Knox). The characteristic data of the scanned image is determined and used to calibrate the printer. Only the characteristic data, such as the model parameters and tone reproduction curve (TRC), are transmitted in calibration mode. The raster image data itself is not transmitted.

Clouthier in view of Spaulding is combinable with Knox because they are from the same field of endeavor, namely the correction of digital image data. Furthermore, Knox is concerned with the same problem solving area as the present application, namely the correction of image data in an efficient manner, without require the transmission of the actual image data. At the time of the invention, it would

have been obvious to a person of ordinary skill in the art to correct image data by transmitting only the characteristic data needed to perform the correction/calibration, as taught by Knox, instead of the raster image data of said at least one area taught by Clouthier. The motivation for doing so would have been to provide for an automatic correction/calibration using a single set of characterization data, rather than using the sets of image data (column 2, lines 39-41 of Knox), thus improving speed and efficiency. Therefore it would have been obvious to combine Knox with Spaulding in view of Clouthier to obtain the invention as specified in claims 80 and 86.

Further regarding claim 80: The method of claim 80 is performed by the computer program product of claim 86.

Regarding claims 76 and 81: Clouthier discloses that said dither cells contain picture elements that are arranged one of rectangularly and quadratically (figure 2b(52,54,56) and column 8, lines 60-62 of Clouthier); and that each dither cell with a higher gray scale value at least contains inked picture elements at same positions as a dither cell with a next-lower gray scale value (column 6, lines 33-37 of Clouthier).

Regarding claim 82: Clouthier discloses that said dither cells of a rectangular region (figure 2b (52,54,56) of Clouthier) have a common minimum gray scale value (column 6, lines 63-67 and column 7, lines 39-44 of Clouthier).

Regarding claim 83: Clouthier discloses producing a list of said rectangular regions (column 8, lines 25-30 of Clouthier); and transmitting said characteristic data of said rectangular regions of said list (column 8, lines 34-35 of Clouthier).

Regarding claim 88: Clouthier discloses that said computer program element is present on a computer-readable medium (column 3, lines 12-15 of Clouthier).

Claims 47-48 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clouthier (US Patent 5,949,964) in view of Spaulding (US Patent 5,822,451), Knox (US Patent 5,649,073), and Hiratsuka (US Patent 4,758,897).

Regarding claim 47: Clouthier in view of Spaulding and Knox does not disclose expressly comparing using a comparison row that contains only said model dither cells and whose length at least corresponds to said uniform row length of a tile so as to determine whether a tile contains dither cells at least with said lowest gray scale value corresponding to said model dither cell; and implementing said comparing step tile row by tile row.

Hiratsuka discloses comparing using a comparison row (figure 16A-16D and column 2, lines 55-57 of Hiratsuka) that contains only said model dither cells (column 9, lines 35-43 of Hiratsuka) and whose length at least corresponds to said uniform row length of a tile (figure 18; column 9, lines 53-59; and column 10, lines 63-65 of Hiratsuka) so as to determine whether a tile contains dither cells at least with said lowest gray scale value corresponding to said model dither cell (figures 21A-21D and column 11, lines 53-60 of Hiratsuka); and implementing said comparing step tile row by tile row (column 9, line 67 to column 10, line 2 of Hiratsuka).

Clouthier in view of Spaulding and Knox is combinable with Hiratsuka because they are from the same field of endeavor, namely control and output of digital image dither data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to perform tile row by tile row comparisons of model dither cells with the generated halftone data according to the teachings of Hiratsuka. The motivation for doing so would have been to effectively obtain representative gray scale values for predefined regions of the dithered image (column 1, lines 58-65 of Hiratsuka). Therefore, it would have been obvious to combine Hiratsuka with Clouthier in view of Spaulding and Knox to obtain the invention as specified in claim 47.

Further regarding claim 48: Hiratsuka discloses that the length of said comparison row amounts to the smallest common multiple of row length of a tile and row length of said dither cell (figures 21A-21D and column 10, lines 63-68 of Hiratsuka). Since row length of the tile and the row length of said dither cell are set to the same size in the comparison step (figures 21A-21D and column 10, lines 63-68 of Hiratsuka), then the length of said comparison row amounts to the smallest common multiple of row length of a tile and row length of said dither cell.

Further regarding claim 50: Hiratsuka discloses using said comparison row with the appertaining model dither cells for each gray scale value (column 9, lines 60-67 of Hiratsuka).

Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over Clouthier (US Patent 5,949,964) in view of Spaulding (US Patent 5,822,451), Knox (US Patent 5,649,073), Hiratsuka (US Patent 4,758,897), and Wong (US Patent 4,032,978).

Regarding claim 49: Clouthier discloses that the size of the picture element matrix of said dither cell can have one of several different sizes (column 6, lines 53-59 of Clouthier).

Clouthier in view of Spaulding, Knox and Hiratsuka does not disclose expressly that said dither cell has one of an 8x8 and 10x10 picture element matrix.

Wong discloses that said dither cell has one of an 8x8 and 10x10 picture element matrix (figure 11(G8,G10) and column 9, lines 37-43 of Wong).

Clouthier in view of Spaulding, Knox and Hiratsuka is combinable with Wong because they are from the same field of endeavor, namely control and output of digital image dither data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use an 8x8 or a 10x10 picture element matrix for said dither cell, as taught by Wong. The motivation for doing so would have been to provide for either 64 or 100 possible gray scale values, thus increasing the number of available

representable tones. Therefore, it would have been obvious to combine Wong with Clouthier in view of Spaulding, Knox and Hiratsuka to obtain the invention as specified in claim 49.

Claims 52, 57, 62, 71 and 78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clouthier (US Patent 5,949,964) in view of Spaulding (US Patent 5,822,451), Knox (US Patent 5,649,073), and Venkateswar (European Patent Application 0 774 858 A2).

Regarding claims 52, 57, 62 and 78: Clouthier in view of Spaulding and Knox does not disclose expressly transmitting said characteristic data in compressed form.

Venkateswar discloses transmitting characteristic data of a tiled image (column 2, lines 56-58 of Venkateswar) in compressed form (column 3, lines 13-19 of Venkateswar).

Clouthier in view of Spaulding and Knox is combinable with Venkateswar because they are from the same field of endeavor, namely control and output of digital image dither data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to compress said characteristic data before transmitting, as taught by Venkateswar. The motivation for doing so would have been to reduce the bandwidth required for transmitting the data, and thus the data transmission time (column 2, lines 22-25 of Venkateswar). Therefore, it would have been obvious to combine Venkateswar with Clouthier in view of Spaulding and Knox to obtain the invention as specified in claims 52, 57, 62 and 78.

Regarding claim 71: Clouthier in view of Spaulding and Knox does not disclose expressly that said RIP module is a POSTSCRIPT converter module.

Venkateswar discloses a RIP module that is a POSTSCRIPT converter module (column 3, lines 20-22 of Venkateswar).

Clouthier in view of Spaulding and Knox is combinable with Venkateswar because they are from the same field of endeavor, namely control and output of digital image dither data. At the time of the

invention, it would have been obvious to a person of ordinary skill in the art to specifically use a POSTSCRIPT converter module for said RIP module, as taught by Venkateswar. The suggestion for doing so would have been that POSTSCRIPT is one of many different types of useful page description languages available (column 3, lines 20-22 of Venkateswar). Therefore, it would have been obvious to combine Venkateswar with Clouthier in view of Spaulding to obtain the invention as specified in claim 71.

Claims 63, 65 and 69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clouthier (US Patent 5,949,964) in view of Spaulding (US Patent 5,822,451), Knox (US Patent 5,649,073), and Endoh (US Patent 4,652,935).

Regarding claims 63 and 65: Clouthier discloses marking said rectangles that contain only dither cells to produce marked rectangles (column 5, lines 5-12 of Clouthier).

Clouthier in view of Spaulding and Knox does not disclose expressly removing said raster image data of said marked tiles from said data stream by subtraction; and compressing a remaining data stream according to a standardized compression method and transmitting remaining image raster data stream.

Endoh discloses removing model picture elements from said data stream by subtraction; and compressing a remaining data stream according to a standardized compression method (column 12, lines 37-43 and column 13, lines 8-13 of Endoh) and transmitting remaining data stream (column 13, lines 20-23 and lines 30-35 of Endoh). The run-length encoding is based on the extracted picture elements to be encoded (column 12, lines 37-43 of Endoh). The extracted picture elements are encoded into run-length codes (column 13, lines 8-13 of Endoh). Thus, the model picture elements are removed from the data stream by subtraction and the remaining data stream is compressed and transmitted.

Clouthier in view of Spaulding and Knox is combinable with Endoh because they are from the same field of endeavor, namely control and output of digital image dither data. At the time of the

invention, it would have been obvious to a person of ordinary skill in the art to use run-length encoding, as taught by Endoh, for the tiles taught by Clouthier in view of Spaulding and Knox. The model (extracted) picture elements would therefore be the marked tiles taught by Clouthier in view of Spaulding and Knox. The motivation for doing so would have been to improve the overall transmission speed of the data. Therefore, it would have been obvious to combine Endoh with Clouthier in view of Spaulding and Knox to obtain the invention as specified in claims 63 and 65.

Further regarding claim 69: Endoh discloses recompiling a transmitted image raster data using an OR function (column 18, lines 1-32 of Endoh). Decoding occurs based on which one of a plurality of different procedures, which are listed in detail in column 18, lines 1-32 of Endoh, is used for the particular data portion currently being considered by the processor. Further, the mode selection and the status selection are set in controlling which decoding procedure is performed. Thus, an OR function is required in the decoding since one of a plurality of different encoding procedures must be determined.

Claims 64 and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clouthier (US Patent 5,949,964) in view of Spaulding (US Patent 5,822,451), Knox (US Patent 5,649,073), Endoh (US Patent 4,652,935), and Brindle (US Patent 5,526,469).

Regarding claims 64 and 66: Clouthier in view of Spaulding, Knox and Endoh does not disclose expressly that said standardized compression method is a FAX G4 compression method.

Brindle discloses specifically using a FAX G4 compression method as said standardized compression method (column 3, lines 38-40 of Brindle).

Clouthier in view of Spaulding, Knox and Endoh is combinable with Brindle because they are from the same field of endeavor, namely the control and processing of digital print data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to specifically use a FAX G4 compression method, as taught by Brindle. The suggestion for doing so would have been that the

FAX G4 compression method is commonly used (column 3, lines 38-40 of Brindle), and would thus be widely supported. Therefore, it would have been obvious to combine Brindle with Clouthier in view of Spaulding, Knox and Endoh to obtain the invention as specified in claims 64 and 66.

Claims 67-68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clouthier (US Patent 5,949,964) in view of Spaulding (US Patent 5,822,451), Knox (US Patent 5,649,073), and Züfle (US Patent 5,940,584).

Regarding claims 67 and 68: Clouthier in view of Spaulding and Knox does not disclose expressly transmitting data of said marked tiles according to an SPDS data format.

Züfle discloses transmitting print data according to an SPDS data format (column 3, lines 52–58 of Züfle).

Clouthier in view of Spaulding and Knox is combinable with Züfle because they are from the same field of endeavor, namely the control and processing of digital print data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to specifically use a SPDS data format for print data transmission, as taught by Züfle, for the marked tiles taught by Clouthier in view of Spaulding and Knox. The motivation for doing so would have been that SPDS format can be used to reliably send printing data to an archival filing system without needing to be directly printed first (column 3, lines 49-56 of Züfle). Thus, the marked tiles taught by Clouthier in view of Spaulding and Knox could be sent directly to memory from which they could be accessed for use by the printing system for printing each gray scale value in the desired fashion according to said marked tiles. Therefore, it would have been obvious to combine Züfle with Clouthier in view of Spaulding and Knox to obtain the invention as specified in claims 67 and 68.

Claims 73-74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clouthier (US Patent 5,949,964) in view of Spaulding (US Patent 5,822,451), Knox (US Patent 5,649,073), Venkateswar (European Patent Application 0 774 858 A2), and Applicant's admitted prior art.

Regarding claims 73-74: Clouthier in view of Spaulding, Knox and Venkateswar does not disclose expressly that said printer is a high-performance printer that has a printing output of at least 400 DIN A4 pages per minute at 600 DPI.

However, on page 2, lines 2-6 of the present specification, Applicant specifically states "The following example makes this clear: A DIN A4 page contains approximately 4.3 megabytes of image raster data given a pixel density of 600 dpi (dots per inch). A high-performance printer has the capability of printing more than 400 DIN A4 pages per minute at 600 dpi. Accordingly, a data rate of more than 28 megabytes/s would have to be governed without compression." Thus, Applicant clearly demonstrates that a high-performance printer that has a printing output of at least 400 DIN A4 pages per minute at 600 DPI is old, well-known and expected in the art. One of ordinary skill in the art at the time of the invention would have been motivated to use said high performance printer since said high performance printer can print at a fast pace, thus completing printing tasks quickly.

Claim 84 is rejected under 35 U.S.C. 103(a) as being unpatentable over Clouthier (US Patent 5,949,964) in view of Spaulding (US Patent 5,822,451), Knox (US Patent 5,649,073), and well-known prior art.

Regarding claim 84: Clouthier in view of Spaulding does not disclose expressly transmitting said characteristic data in compressed form without transmitting and compressing raster image data of said rectangular regions.

Knox discloses transmitting characteristic data without transmitting image raster data of said rectangular regions (figure 6A ("MODEL PARAMETERS"); figure 6B("EXPECTED TRC"); column 5,

lines 20-30; and column 8, lines 3-11 of Knox). The characteristic data of the scanned image is determined and used to calibrate the printer. Only the characteristic data, such as the model parameters and tone reproduction curve (TRC), are transmitted in calibration mode. The image raster data itself is not transmitted.

Clouthier in view of Spaulding is combinable with Knox because they are from the same field of endeavor, namely the correction of digital image data. Furthermore, Knox is concerned with the same problem solving area as the present application, namely the correction of image data in an efficient manner, without require the transmission of the actual image data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to correct image data by transmitting only the characteristic data needed to perform the correction/calibration, as taught by Knox, instead of the image raster data of said marked tiles taught by Clouthier. The motivation for doing so would have been to provide for an automatic correction/calibration using a single set of characterization data, rather than using the sets of image data (column 2, lines 39-41 of Knox), thus improving speed and efficiency. Therefore it would have been obvious to combine Knox with Spaulding in view of Clouthier.

Spaulding in view of Clouthier and Knox does not disclose expressly that said characteristic data is transmitted in compressed form without compressing raster image data of said rectangular regions.

Official Notice is taken that transmitting data in compressed form is old, well-known and expected in the art. At the time of the invention, one of ordinary skill in the art would have been motivated to transmit said characteristic data in compressed form since compressed data transmits faster due to the smaller number of bits that need to be transmitted. Since, according to the teachings of Knox, the raster image data of said rectangular regions is not transmitted, said raster image data would also not be compressed since transmission is not required.

Claims 89-92 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clouthier (US Patent 5,949,964) in view of Spaulding (US Patent 5,822,451).

Regarding claims 89 and 92: Clouthier discloses a computer-readable medium that contains a computer program on the computer-readable medium which causes a computer to implement the steps of (column 3, lines 12-15 of Clouthier) generating a data stream of image raster data page-by-page (column 4, lines 9-14 of Clouthier) from language elements of a graphics language (column 3, lines 29-32 of Clouthier), said data stream containing gray picture elements in a form of dither cells (column 4, lines 2-8 of Clouthier); determining at least one area that contains only dither cells (column 4, lines 3-5 of Clouthier); identifying a gray scale value of said at least one area (column 5, lines 40-47 of Clouthier), and marking said at least one area (column 5, lines 6-12 of Clouthier); and transmitting characteristic data of said marked tiles for further processing of the image raster data (column 4, lines 57-62 and column 5, lines 1-4 of Clouthier), said characteristic data containing information about a position of the respective tile (column 6, line 63 to column 7, line 1 of Clouthier) and the respective gray scale value (column 6, lines 12-17 of Clouthier). The tiles correspond to the sections of image data that are classified in one of four possible ways (column 4, lines 2-8 of Clouthier).

Clouthier does not disclose expressly that the gray scale values of said dither cells are defined by model dither cells; and identifying an appertaining model dither cell and said gray scale value of said at least one area.

Spaulding discloses defining the gray scale values of dither cells using model dither cells (figure 11(116A-C) and column 14, lines 32–39 of Spaulding); and identifying an appertaining model dither cell and a gray scale value of at least one area of dither cells (column 14, lines 36-45 of Spaulding).

Clouthier and Spaulding are combinable because they are from the same field of endeavor, namely selective processing, control and output of digital color image dither data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the model dither cells

to set the dither cells of each corresponding gray scale value for each tile of dithered image data, as taught by Spaulding, wherein said dither cells are the dither cells of the tiles specifically defined and marked by the system taught by Clouthier. The motivation for doing so would have been reduce image artifacts by using already optimized model dither cells stored in LUTs for dithering the image data (column 3, lines 28-35 of Spaulding). Further, it would have been readily recognized by one of ordinary skill in the art at the time of the invention that using already optimized dither cells stored in LUTs decreases the overall processing time required. Therefore, it would have been obvious to combine Spaulding with Clouthier to obtain the invention as specified in claims 89 and 92.

Further regarding claim 89: The computer program element of claim 89 is fully embodied on the computer-readable medium of claim 92.

Regarding claim 90: Clouthier discloses that said computer program element is present on a computer-readable medium (column 3, lines 12-15 of Clouthier).

Regarding claim 91: Clouthier discloses a computer-readable medium that contains a computer program, comprising: the computer program on the computer-readable medium which causes a computer to implement the following steps (column 3, lines 12-15 of Clouthier): generating a data stream of image raster data (column 4, lines 9-14 of Clouthier) from language elements of a graphics language (column 3, lines 29-32 of Clouthier), said data stream containing gray image areas in a form of dither cells (column 4, lines 2-8 of Clouthier); dividing said image raster data of each one of said page into tiles of a two-dimensional grid network (figure 1(14) and column 3, lines 28-32 of Clouthier), each of said tiles including a plurality of said image raster data (column 5, lines 6-12 of Clouthier), identifying appertaining ones of dither cells and said gray scale values for each of said tiles that contains only dither cells (column 5, lines 40-47 of Clouthier) to produce marked tile (column 5, lines 6-12 of Clouthier); and transmitting characteristic data of the marked tiles for further processing of said image raster data (column 4, lines 57-62 and column 5, lines 1-4 of Clouthier), said characteristic data including information about a position of

a respective one of said tiles (column 6, line 63 to column 7, line 1 of Clouthier) and a respective one of said gray scale values (column 6, lines 12-17 of Clouthier). The tiles correspond to the sections of image data that are classified in one of four possible ways (column 4, lines 2-8 of Clouthier).

Clouthier does not disclose expressly that the gray scale values of said dither cells are determined by model dither cells; and an appertaining model dither cell and said gray scale value thereof are identified for each tile that contains only dither cells.

Spaulding discloses determining the gray scale values of dither cells using model dither cells (figure 11(116A-C) and column 14, lines 32–39 of Spaulding); and identifying an appertaining model dither cell and a gray scale value thereof for each tile of dither cells (column 14, lines 36-45 of Spaulding).

Clouthier and Spaulding are combinable because they are from the same field of endeavor, namely selective processing, control and output of digital color image dither data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the model dither cells to set the dither cells of each corresponding gray scale value for each tile of dithered image data, as taught by Spaulding, wherein said dither cells are the dither cells of the tiles specifically determined and marked by the system taught by Clouthier. The motivation for doing so would have been reduce image artifacts by using already optimized model dither cells stored in LUTs for dithering the image data (column 3, lines 28-35 of Spaulding). Further, it would have been readily recognized by one of ordinary skill in the art at the time of the invention that using already optimized dither cells stored in LUTs decreases the overall processing time required. Therefore, it would have been obvious to combine Spaulding with Clouthier to obtain the invention as specified in claim 91.

(10) Response to Argument

Regarding page 16, line 9 to page 22, line 8 [Arguments, section (a)] of Appeal Brief:

Appellant argues that the combination of Clouthier and Spaulding does not teach to mark tiles containing dither cells, determine the corresponding dither cells as well as the gray scale value thereof, transmit the position of these tiles, and the corresponding gray scale values are used instead of the document data for these cells in order to reduce the data to be transmitted for the page [see last four lines of page 17 of Appeal Brief].

Examiner replies that Clouthier teaches marking tiles containing dither cells. Column 5, lines 6-12 of Clouthier demonstrate the marking that is performed on the dither cells, specifically that particular pixels can be marked "01" or "10" as being either graphics image or raster image data, respectively. The output of graphic image data or raster image data requires dithering since dithering is the process by which the particular dots which are to be marked or not marked at the printing stage are determined. The fact that the marking is performed to tiles is further evidenced by column 6, lines 33-37 of Clouthier which describes the threshold array being logically tiled across the raster image to derive a smooth dither.

Clouthier further teaches identifying the gray scale values of the marked tiles, as specifically recited by claim 39. Column 6, lines 12-17 of Clouthier describes how the halftoning process produces a number of different color intensities (and thus gray scale values). The halftoning is performed to the corresponding dither cells to produce dithered output, as shown in column 6, lines 33-37 of Clouthier. Further, Spaulding teaches identifying a model dither cell and a gray scale value thereof for each tile of dither cells, as shown in column 14, lines 36-45 of Spaulding where stored model dither cells are selected to render a particular gray scale value based on row and column of a particular tile.

Clouthier additionally teaches that the halftone identifier for each pixel is transmitted to a print engine or the appropriate halftone processor so that appropriate rendering and outputting can be

performed [see column 4, line 57 to column 5, line 14 of Clouthier]. The pixel and its associated image type naturally includes position data that needs to be transmitted [see column 6, lines 39-43 of Clouthier].

Finally, Clouthier teaches transmitting the characteristic data of the marked tiles of the image raster data, namely the halftone identifier discussed above. Examiner relied upon Knox to teach transmitting the characteristic data of the marked tiles of the image raster data [as taught by Clouthier] without transmitting the image raster data, as specifically recited in claim 39. Knox teaches that only the characteristic data, such as the model parameters and the tone reproduction curve, are transmitted in calibration mode, and not any of the image raster data [see column 5, lines 20-30 and column 8, lines 3-11 of Knox].

Appellant argues that it would not have been obvious to combine the printer calibration of Knox with the halftone processing disclosed in Clouthier and Spaulding [page 18, lines 16-25 of Appeal Brief]; and the combination does not teach that printing can be performed while not transmitting the raster data [page 18, line 26 to page 19, line 2 of Appeal Brief].

Examiner replies that Clouthier, Spaulding and Knox are all concerned with the correction and optimal rendering of digital image data. Clouthier and Spaulding both perform correction and optimal rendering based on the characteristics of the image data. Thus, for the purposes of correction and optimal processing, only the characteristic data (identifier in Clouthier, dither matrix identity in Spaulding) needs to be transmitted. Knox teaches that only the characteristic data is transmitted. While Knox teaches this transmission in the context of calibration, this type of transmission can be readily applied to the system taught by the combination of Clouthier in view of Spaulding, which only requires data corresponding to the characteristics in order to set up a proper dithering pattern. Clouthier, for example, processes the image so as to optimally render the image according to the local characteristics [column 5, lines 1-13 of Clouthier]. The teachings of Knox would thus be applied in the context of the combined system of

Clouthier in view of Spaulding, and not in some separate calibration routine. The motivation for doing so, as set forth by Examiner in the final rejection [see page 4, lines 20-22 of final rejection of 10 July 2007], would have been to provide for an automatic correction using a single set of characterization data, rather than using the sets of image data (column 2, lines 39-41 of Knox), thus improving speed and efficiency. Therefore, there is sufficient reason to combine the references.

Finally, claim 39 as specifically recited requires that printing can be performed while not transmitting the raster data *of the marked tiles*. Knox teaches transmitting only the characteristic data. Clouthier in view of Spaulding teaches using already optimized dither cells for stored in Look-Up-Tables (LUT's) to dither the image data [see last 9 lines of page 3 to page 4, line 5 of said final rejection], the model dither cell corresponding to the marked tiles taught by Clouthier [see page 3, lines 12-14 of said final rejection]. Thus, for marked tiles which are rendered using the optimized dither cells, only the identity of the optimized dither cell needs to be sent.

Appellant argues that Clouthier does not teach dividing the image data into tiles [page 19, line 3 to page 20, line 3 of Appeal Brief].

Examiner replies that the image is divided into regions based on the local characteristics [column 5, lines 1-13 of Clouthier]. Two such characteristics, graphics image data and raster image data, are given the identifiers "01" and "10", respectively, and are later halftoned. The halftoning is performed using a threshold matrix that is logically tiled across the image data, thus dithering the image data [column 6, lines 32-37 of Clouthier]. Thus, by dividing the image into regions, some of which contain only dither cells (01 and 10 identifiers), the image data is divided into tiles.

Appellant argues that Knox does not teach transmitting the characteristic data without transmitting the image raster data [page 20, lines 4-19 of Appeal Brief].

Examiner replies that only the characteristic data of the scanned image, such as the model parameters and tone reproduction curve (TRC), are determined and transmitted for the purpose of calibrating the printer [see column 5, lines 20-30 and column 8, lines 3-11 of Knox]. The image raster data itself is not transmitted.

Appellant argues that the specifically recited language of claim 40 is not taught by Clouthier [page 20, lines 20-24 of Appeal Brief].

Examiner replies that Clouthier teaches that the threshold matrix is logically tiled across the image [column 6, lines 33-37 of Clouthier]. The threshold matrix is used to determine which positions are inked for a particular pixel value [column 6, lines 37-49 of Clouthier], as is common and well-known in the art. Thus, a dither cell with a pixel value of 19 (for example) will be inked at every relative position that a dither cell with a pixel value of 18 would be inked in addition to being inked at one additional position corresponding to the threshold value of 19.

Appellant argues that Knox does not teach transmitting said characteristic data of said polygon for further processing of said image raster data instead of transmitting raster data of said polygon [page 20, line 25 to page 21, line 3 of Appeal Brief].

Examiner replies that Clouthier teaches combining neighboring ones of said tiles having a prescribed gray scale value corresponding to one of said model dither cells to form a polygon (figure 2a (48) and column 6, line 63 to column 7, line 3 of Clouthier); identifying said characteristic data of said polygon (column 6, lines 63-67 of Clouthier – corresponding bucket); and transmitting said characteristic data of said polygon for further processing of said image raster data (figure 2b and column 8, lines 25-35

of Clouthier). Knox, as discussed above, teaches transmitting characteristic data without transmitting image raster data. By combination, as set forth on page 6 of said final rejection, the specifically recited language of claim 51 is taught.

Appellant argues that there is no mention in Clouthier of a list ranked in descending order [page 21, lines 4-10 of Appeal Brief].

Examiner replies that the list of selectable supercells is organized such that the smallest supercell (with the smallest number of pixels, and thus the smallest number of tiles) has the smallest rank and the largest supercell has the largest rank (column 8, lines 12-16 of Clouthier). If the data type requires the selection of the largest supercell, then the largest supercell is output (column 8, lines 30-35 of Clouthier). Thus, the list is organized such that rectangles with a descending number of tiles assume a descending rank in the list (column 8, lines 12-16 of Clouthier).

Appellant argues that Clouthier does not teach limiting a number of regions tagged by model dither cells [page 21, lines 11-15 of Appeal Brief].

Examiner replies that the number of rectangles is limited by setting the rectangle size based on the capabilities of the printer to be used (column 8, lines 16-24 of Clouthier). Thus, a number of rectangles of said list is limited to a predetermined value, as required by the language of claim 59.

Appellant argues that the prior art does not teach identifying a gray scale value for each identified tile that contains only dither cells [page 21, lines 16-26 of Appeal Brief].

Examiner replies that Clouthier does teach identifying a gray scale value for each identified tile that contains only dither cells. In column 5, lines 40-47 of Clouthier, the tones of the pixels, and thus the gray scale values, are analyzed for raster image data. The raster image data and graphics image data,

which are identified and given identifiers 01 and 10 [see column 5, lines 1-13 of Clouthier], contain only dither cells since raster image data and graphics image data must be halftoned in order to be output.

Appellant argues that Knox does not teach transmitting characteristic data of polygons instead of characteristic data or tiles [page 21, lines 27-32 of Appeal Brief].

Examiner replies that Clouthier teaches combining neighboring ones of said tiles having a prescribed gray scale value corresponding to one of said model dither cells to form a polygon (figure 2a (48) and column 6, line 63 to column 7, line 3 of Clouthier); identifying said characteristic data of said polygon (column 6, lines 63-67 of Clouthier – corresponding bucket); and transmitting said characteristic data of said polygon for further processing of said image raster data (figure 2b and column 8, lines 25-35 of Clouthier). Knox, as discussed above, teaches transmitting characteristic data without transmitting image raster data. By combination, as set forth on pages 9-10 of said final rejection, the specifically recited language of claim 77 is taught.

Appellant argues that the prior art does not teach transmitting characteristic data of the marked area for printing of the image raster data without transmitting the raster image data of said at least one area [page 22, lines 1-8 of Appeal Brief].

Examiner replies that, similar to as discussed above, Clouthier teaches transmitting characteristic data of said marked tiles for printing of the image raster data [column 4, line 57 to column 5, line 14 of Clouthier], said characteristic data containing information about a position of the respective tile [column 6, line 63 to column 7, line 1 of Clouthier] and the respective gray scale value [column 6, lines 12-17 of Clouthier]. Knox teaches transmitting characteristic data without transmitting raster image data [figure 6A ("MODEL PARAMETERS"); figure 6B("EXPECTED TRC"); column 5, lines 20-30;

and column 8, lines 3-11 of Knox]. Knox, combined with Clouthier in view of Spaulding, thus teaches the disputed claim language for reasons similar to those set forth above for claim 39.

Regarding page 22, lines 10-28 of Appeal Brief:

Appellant argues that Hiratsuku does not teach the limitations lacking in the combination of Clouthier, Spaulding and Knox, and thus claims 47, 48 and 50 are non-obvious.

Examiner replies that the prior art rejection of claim 39 has been shown to be proper and Appellant has made no substantive arguments as to why Appellant believes the language specifically recited in claims 47, 48 and 50 are non-obvious. Thus, the prior art rejections of claims 47, 48 and 50 are also proper.

Regarding page 22, line 30 to page 23, line 10 of Appeal Brief:

Appellant argues that Wong does not teach the limitations lacking in the combination of Clouthier, Spaulding and Knox, and thus claim 49 is non-obvious.

Examiner replies that the prior art rejection of claim 39 has been shown to be proper and Appellant has made no substantive arguments as to why Appellant believes the language specifically recited in claim 49 is non-obvious. Thus, the prior art rejection of claim 49 is also proper.

Regarding page 23, lines 12-28 of Appeal Brief:

Appellant argues that Venkateswar does not teach compressing and transmitting the characteristic data without the raster data, and does not teach what is lacking in the combination of Clouthier, Spaulding and Knox.

Examiner replies that Venkateswar discloses transmitting characteristic data of a tiled image [column 2, lines 56-58 of Venkateswar] in compressed form [column 3, lines 13-19 of Venkateswar]. By

combination with Clouthier in view of Spaulding and Knox, the transmitting would occur without the raster data. Further, the prior art rejection of claim 39 has been shown to be proper and Appellant has made no substantive arguments as to why Appellant believes the language specifically recited in claims 52, 57, 62, 71 and 78 are non-obvious. Thus, the prior art rejections of claims 52, 57, 62, 71 and 78 are also proper.

Regarding page 23, line 30 to page 25, line 8 of Appeal Brief:

Appellant argues that Endoh does not teach removal of data by subtraction; or recompiling an image raster data using an OR function.

Examiner replies that the run-length encoding is based on the extracted picture elements to be encoded [column 12, lines 37-43 of Endoh]. The extracted picture elements are encoded into run-length codes [column 13, lines 8-13 of Endoh]. Thus, the model picture elements are removed from the data stream by subtraction and the remaining data stream is compressed and transmitted.

Further, decoding occurs based on which one of a plurality of different procedures, which are listed in detail in column 18, lines 1-32 of Endoh, is used for the particular data portion currently being considered by the processor. Further, the mode selection and the status selection are set in controlling which decoding procedure is performed. Thus, an OR function is required in the decoding since one of a plurality of different encoding procedures must be determined.

Regarding page 25, line 10 to page 26, line 2 of Appeal Brief:

Appellant argues that using five references is non-obvious; and that Brindle does not teach what is lacking in the combination of Clouthier in view of Spaulding, Knox and Endoh.

Examiner replies that it is well established that the number of references by itself is not an adequate measure of non-obviousness [see MPEP § 2145 (V)]. Brindle is brought in merely to teach

which particular type of compression is used, namely a fax G4 compression method. Compression itself is already taught by the combination of Clouthier in view of Spaulding, Knox and Endoh. Specifying a particular type of compression would have been well within the ability of one of ordinary skill in the art at the time of the invention, would have been obvious to try, and would have generated predictable results. Appellant has shown nothing that would indicate that choosing fax G4 compression as the particular type of compression would have been novel and non-obvious.

Further, the prior art rejection of claim 39 has been shown to be proper and Appellant has made no substantive arguments as to why Appellant believes the language specifically recited in claims 64 and 66 are non-obvious. Thus, the prior art rejections of claims 64 and 66 are also proper.

Regarding page 26, lines 4-19 of Appeal Brief:

Appellant argues that Zufle does not teach what is lacking in the combination of Clouthier in view of Spaulding and Knox.

Examiner replies that the prior art rejection of claim 39 has been shown to be proper and Appellant has made no substantive arguments as to why Appellant believes the language specifically recited in claims 67 and 68 are non-obvious. Thus, the prior art rejections of claims 67 and 68 are also proper.

Regarding page 26, lines 21-32 of Appeal Brief:

Appellant argues that Venkateswar does not teach what is lacking in the combination of Clouthier in view of Spaulding and Knox.

Examiner replies that the prior art rejection of claim 39 has been shown to be proper and Appellant has made no substantive arguments as to why Appellant believes the language specifically

recited in claims 73 and 74 are non-obvious. Thus, the prior art rejections of claims 73 and 74 are also proper.

Regarding page 26, line 34 to page 27, line 7 of Appeal Brief:

Appellant argues that claim 80 is non-obvious and thus claim 84, which depends from claim 80, is non-obvious.

Examiner replies that claim 80 has been shown to be obvious over Clouthier in view of Spaulding and Knox. Thus, claim 84 cannot be deemed non-obvious merely due to its dependence from claim 80.

Regarding page 27, lines 9-18 of Appeal Brief:

Appellant argues that claims 89-92 are non-obvious for reasons given earlier in the Appeal Brief.

Examiner replies that, since all the prior art rejections have been demonstrated to be obvious to one of ordinary skill in the art at the time of the invention, claims 89-92 cannot therefore be considered obvious merely due to similar reasoning.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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Conferees:

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